Review of Draft QAPP for Hangman (Latah) Creek Watershed TMDL Modeling Project (dated 09/06/06)

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General comment:

The Environmental Protection Agency (USEPA) quality assurance project plan (QAPP) format for modeling is new to me, so please forgive me for misunderstanding what is expected of the document. My experience comes from writing and reviewing TMDL project QAPPs that focus on data collection and management with less detailed emphasis on the modeling tasks of the work. However, we at Ecology are being asked to provide more information in our QAPPs to cover the modeling portions of our work, so I'm very aware that the comments and questions in my review may be presented to me by another reviewer of my next project QAPP.

I also understand that the Hangman Creek TMDL modeling contract QAPP requirement is somewhat burdensome under the schedule/timeline set for this project. The information from earlier milestones (Tasks 2, 3,4,9, and 5 on page 15) may not have made it into this document because of the tight schedule and volume of information to sort and analyze. However, my experience has been that everyone goes back to the QAPP when there is a disagreement about the process and expectations of the final product.

That all being said, it's my general sense that the QAPP document contains a lot of information that has not been integrated. How well WARMF will meet the objectives of the project considering the data that are available was not clearly discussed. To me, that discussion should be the central focus of a modeling QAPP. The case should be made of how well the project team guessed right in its initial assessment, that WARMF will be the right model for the project.

The QAPP should describe, even in a qualitative manner, the Hangman watershed database strengths and weaknesses, how those strengths and weaknesses may affect the WARMF model structure, and how that may affect the landscape and water quality outputs. It seems that the modeling team also would have some sense of what are the key inputs or processes to watch in the Hangman watershed based on previous modeling projects with WARMF.

In conclusion, I would have liked the document to address the objectives of Section A5, by interpreting Section B2 data through Section A7 and B1 criteria. This might be what Section D (Output Assessment and Model Usability) of the USEPA QA/G-5M guidelines are about, but I'm not sure.

Specific comments:

- Page 10-11 Landscape Model/ Sediment: 'The user defines surface distribution of sediment between sand, silt, and clay.' Does this mean that the user modifies the soil characteristics in the soil coverage and uses it for a calibration tool, or does it mean that the dominant surface soil characteristics of a catchment are chosen from the soildatamart.nrcs.usda database based on some kind of land use criteria?
- Page 11 Water Quality Model/Sediment: 'Silt and clay deposition occurs based on user-defined velocities.' Same sort of question as previous – aren't silt and clay deposition based on physical principles? Do you mean that the catchment reaches are at too large of scale so that some modification of sedimentation rates needs to happen?
- Page 11 paragraph 5: Please eliminate the word 'likely' in the sentence, 'The model will likely be designed for continuous and dynamic…' unless the data will not support a short or long-term continuous simulation.
- Page 11 paragraph 5: According to the September 1 email, you were considering 36 catchments instead of 16. I would prefer a specific number or range of proposed catchments to the phrase 'yet-to-be-determined'.
- Page 13 last paragraph: 'The simulation period may be a single season, year …" Analysis of the Hangman watershed database should have given you at least some idea of possible simulation periods with adequate data for simulation and calibration. Please list the likely suspects.
- Page 15 Data Quality Objectives for Model Application: Something missing in last sentence of the paragraph.
- Page 16 2nd sentence: 'Time series plots are generally evaluated visually as to the agreement…' This may be initially true, but don't we use the statistical tests and other confirmation procedures to define how well the calibration fits? You list these procedures in the next paragraph.
- Page 16 2nd paragraph: Please change 'may include' to 'will include one or more of' in the sentence, 'The hydrodynamic and water quality components of WARMF model for Hangman Creek may include following types of graphical and statistical procedures:'
- Page 16 3rd paragraph: What is meant by, 'uncertainties related to the state-of-the-art in water quality model performance criteria'?
- Page 18 Model calibration: Since 'acceptable agreement' and 'acceptable levels' have not been defined for the project, I'm not sure what to think of this paragraph.
- Page 18 Sensitivity Analysis: Any idea which components are most likely to be 'sequentially varied' based on past experience with the WARMF model?
- Page 19 Land Use: Can the 2001 data layer be used for a set of catchments?
- Page 23: Stream Hydraulics: Did you receive the data from the Spokane CD, or was I supposed to pass a disc on to you?
- Page 26 Section D – Data Validation and Usability: I believe this section was supposed to be 'Output Assessment and Model Usability' that covers QA procedures for the model processing and model output. It would also address the limits on what kind of alternative or 'future' scenarios could be simulated from the model.